

X-431 Pad Sales Manual

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Chapter 1 Basic Knowledge

1.1 Automobile Population

Till Aug.16th, 2011, the global vehicles which are in use is over 1 billion, among which there are cars, trucks and buses. America has the most vehicles. The registered vehicles are over 240 million. Till the end of August, 2011, China's vehicle ownership is up to 219 million, among which the motorbike's percentage is 54.12%, around 119 million. Car ownership is 45.88% of the whole volume, just over 100 million. Japan has 7.4 million vehicles.

According to the statistical data, the global car average ownership is 1:6.75, which means that 1 out of 6.75 people owns a car. In America, the ratio is 1:1.3; in France, Japan and Britain, the ratio is 1:1.7; in China, the ratio is 1:17.2.

In 2011, the global sale of new light vehicle is 7.65 million, which is 6 percentages higher than that of 2010 and also breaks the 70 million sales record made in 2007. The new emerging markets including China, India and Brazil, will continuously expand on the basis of 51% of the global vehicle ownership. Generally speaking, the emerging markets will take up 53% of the total light vehicle sales in 2011. This indicates that the new emerging markets will be the key factor that stimulates the development of the market.

The Asian auto market will continuously maintain good development in future. This area went through more than 25% of the growth in 2010. It's estimated that in 2011 Asian market will increase 7%-8%, and the sales volume will take up 42% of the global sales. Among which, China's auto market increase will still be very obvious.

The situation of each area: in 2011, the production and sales amount of vehicles in China is 1.84189 and 1.85051 million, which increases 0.84% and 2.45% than same period of last year. Among which, the passenger car sales of the country's self-own brands is over 6.1122 million, which decreases 2.56% than same period last year.

America's light vehicle sales of 1.16 million outnumbered North American market, which increases 11% than 2009's sales of 1.04 million.

Canada finishes the sales volume of 1.6 million which increases 7% than last year.

Brazil takes up 75% of the total sales of South America.

Australia reaches the second highest sales volume of yearly sales in 2010.

The vehicle renew plan of western European governments was quitted in 2010, which leads the decrease of the sales. It's estimated that even till 2012, the western European market is still unpleasant.

1.2 Automobile Malfunctions

1.2.1 Definition

The components or assembly are partly or completely lost their operating abilities.

1.2.2 Classifications

- 1) Existing time
 - Intermittent: Appears only in the short time when the problems have been existence.
 - Continuous: Can be troubleshot after components have replaced.
- 2) Occurred time
 - Abruptness: Without any sign, coincidence, can not be detected by diagnosis
 - Gradually: Technical conditions deteriorated by the abrasion, weariness, deformation, corrosion, and ageing, etc. Can be detected by earlier diagnosis.
- 3) Performance affected
 - Functional: The automobile can not carry on its functions, e.g. steering failure, wandering drive, etc.
 - Parameter: The performance parameter can not reach its standard, e.g. engine power declined, fuel consumption increased, emissions exceeded the standard, etc.
- 4) Consequences
 - Slightly: Can be expelled by suitable adjustment
 - General: Replace wearing parts or expelled in a short time by using tool box
 - Severe: Main parts were severe damaged.
 - Deadly: Cause vicious incidents.
- 5) Artificial and Natural

1.2.3 Common Malfunctions

For the common fault, they can be determined from the abnormal of vehicle performance and appearance symptoms by experience, sensory and equipment. Common faults are:

1) Abnormal Performance

Abnormal performance of the car is because of the poor power and economy, mainly in the significantly lower maximum speed, poor vehicle acceleration performance; consuming large quantities fuel and engine oil. Poor vehicle ride comfort, vehicle vibration and noise increased significantly. Poor vehicle operating stability, goes wandering easily, shimmy the front; braking deviation, braking distance too long or no braking.

2) Abnormal Operation Conditions

The abnormal phenomena suddenly occurred during vehicle operating, should be prevented: sudden engine flameout during the driving; can not brake when the car need to; can not start in winter; can not start after engine flameout; steering suddenly failed in driving; what's more, the burst tyre, and car spontaneous combustion and so on. The symptoms are obvious, but have more complicated causes: Mainly because the internal fault was not noticed, and developed into a sudden damage.

3) Abnormal noise

The abnormal sound happened during driving, is the car fault "alarm." The car driver should be aware of a problem when heard the sudden abnormal sound, and stop the car immediately and check, must not let the vehicle "ill operating."

Abnormal noise is the easiest way the trouble to be showed during the operating. It can be heard by the driver and the occupant under normal circumstances. The experienced people can judge the problems by the location of the noise, sound frequency and the timbre: Generally speaking, the heavy sound with strong vibrating associated with more serious failure, the vehicle should be stopped, lower the engine speed or shut down the engine to find the problem; some noises due to some of the parts is faulty, that does not affect the driving, and it can not check out soon, drive the car back to the base or the garage nearby and go for check by the experienced personnel.

4) Unpleasant Smells

People are very sensitive to the unpleasant smells, especially in car driving. Determine first to find out whether it's the car or not. The car smell mainly are the burning smell produced by non-metallic friction material on the brake and clutch; the specific odor of battery electrolyte; burning smell from automotive electrical system and wire. Sometimes the sticky burning smell of the leaked engine oil and abnormal gasoline smell can be smelt. They all should be adequately noticed.

5) Overheat

The vehicle overheating means each part of the vehicle temperature is beyond the normal automobile temperature range. Engine overheating can be significantly shown on the boring of the radiator; transmission overheating, rear axle overheating and brake overheating can be shown by hand touching or water test. Further examination should be place to discover the deep causes, it does not influence driving due to a long time with high load; if the case of internal organs malfunction, should be timely diagnosis and excluded.

6) Abnormal Exhaust Gas Color

Cars in operation, if brake dragging, clutch slipping happened, will emit a burning friction plate smell; engine overheating, lubricating oil goes into the combustion cylinder, it will divergence a special odor; burning smell can be sensed when short circuit and grounding wire.

In the course of the engine, the normal combustion products should be the main component of carbon dioxide and a small amount of water vapor. If the engine abnormal combustion, the exhaust will be mixed with incomplete combustion of carbon particulates, hydrocarbons, carbon monoxide and a lot of water vapor. In addition, nitrogen oxides, etc., then the color may be black, blue or white. That color is not the normal exhaust smoke. For gasoline engine, the normal should be no visible exhaust smoke. But the oil goes up to cylinder, it will become blue; incomplete combustion will be black; and when oil mixed with water, the exhaust is white.

The gas color that Engine exhausted appears the engine working condition. Exhaust smoke from the engine combustion normally have a certain color, and it changes when the engine is not working properly. Blue exhaust when the engine oil is burning, that means engine needs repairing; for the incomplete engine combustion, the exhaust is black, fuel should be changed or adjust the ignition timing; when engine exhaust is white, say, there is water in the oil or cylinder, the fuel or the engine should be checked.

7) Leakage

Leakage is defined as an automobile engine fuel, lubricating oil (or gear oil), brake fluid (or air), and the power steering fluid leakage, etc.. It is also obvious failure symptoms, careful observation can be found. For example, compressed air leaks, you can clearly hear the sound of air leakage. Leakage performance of automotive fuel leaks, oil leaks, coolant leak, brake fluid leakage, steering oil leakage, oil leakage and refrigerant leakage, as well as battery fluid leakage

of the electrical system and electrical system leakage and so on. Car overheating car easily cause leakage and institutional damage. Prone to leak oil as vehicle steering failure; easily cause brake fluid leakage, etc. brake disorder.

8) Appearance Disorders

Car parking space in the flat when, check the appearance of the sometimes find vehicle longitudinal or horizontal skew deviation, showing the appearance of disorders. Check the tire pressure should be noted, frame and suspension damage, body damage and other irregularities. Disorders may affect the appearance of car to car use. Such as cars center of gravity shift, severe vibration, steering instability and cars deviation and so on.

9) Abnormal During Driving

Driving different cars can not usually manifested by the will of the driver to speed up and the steering and braking, car control mechanism can be perceived failures and implementing agencies, in addition to the accelerator pedal, brake pedal, clutch pedal and steering wheel and transmission institutions to check and adjust, but also should conduct a comprehensive inspection. Find fault, and normal maintenance then the car can be used.

1.3 Automobile Detection

1.3.1 Definition

The use of modern detection techniques and equipment for disintegration vehicle inspection and test, its purpose is to determine the technical condition of vehicles and the ability to work.

1.3.2 Content

- Security: including braking, sideslip, steering and headlamp testing.
- Reliability: including automobile abnormal noises, wearing, deformation and crack detection.
- Dynamics: including speed, acceleration, chassis power output, engine power, torque and ignition system, fuel system status detection.
- Economic: including fuel consumption test.
- Regulations adaptability: include status of vehicle noise and emissions testing.

1.3.3 Classifications

1) Safety Performance

- Content: Only test the safety.
- Objective: To ensure that the car has to meet the requirements of the appearance, safety, noise level, emissions targets, to enhance vehicle safety.

2) Comprehensive Performance Test

- Content: test car safety, reliability, power, economy and environmental protection, etc. five main performances.
- Objective: the disintegration of the car is not the case, determine the capacity and technical status of transport vehicles to improve transport efficiency and reduce consumption, make the transport vehicle having good economic and social benefits.

3) Maintenance-related vehicle inspection

- Content: Only detect the vehicle safety, environmental protection and the speed in power performance.
- Objective: According vehicle inspection, to determine the need for major repairs, to find the exact failure location and cause to improve the quality of maintenance.

1.4 Automobile Diagnoses

1.4.1 Definition

By the inspection, analysis, determine the completion of a series activities; it's a test of automotive technology status, aimed at identifying the causes and exact location.

1.4.2 Classifications

1) Diagnosis by experience

Mainly depends on the artificial observation, analysis and logic reasoning, often in conjunction with the disintegration of the repair work carried out. Diagnosis of slow, poor accuracy, requiring diagnosed a wealth of practical experience and high technical level.

2) Diagnosis by equipment analyzing

Using a variety of testing instruments and equipments for a variety of automotive data and by using the data to determine the technical condition of the car, without disintegration. Diagnosis speed very fast, high accuracy can be quantitatively analyzed with large investment.

1.5 Automobile Repairs

Vehicle repairs are car maintenance and car repairs in general.

- Auto Maintenance: To maintain the technical condition of vehicle and ability to work for the job. Can extend vehicle's service life, safe and reliable; fulfill its effectiveness.
- Auto repair: technical condition for the resumption of vehicle capacity and service life or work carried out the operation. Extend vehicle life; protect the car for continued use.

1.6 Automobile Decoder (Diag. Tester)

1.6.1 Definition

Quickly and accurately acquire vehicle engine performance and fault information through the connection and communication with ECU.

1.6.2 Market Background

With the increasing degree of automotive electronics, which inevitable arouses a great changes of car decoder markets.

In recent years, with the rapid development of automotive research and manufacturing technology, vehicle electronics becomes more and more popular. Customers drive their cars for more safety, comfort and stability. This brings new requirements for repair. As the basic equipment in the field of automotive repair, the market of scanner has changed a lot. New requirements are demanded for the scanner in the automotive field.

The process in science and technology has changed the vehicle from "machine with four wheels" to "computer with four wheels". Most operations are controlled by electronic control technology. Nowadays, the electronic control technology is applied in many systems, such as:

——Powertrain system: Engine system (ESA, EFI, EGR, and ISC, etc.), AT, and Immobilizer, etc.

——Chassis System: ABS, ASC, CCS, and Collision Avoidance System, etc.

——Body system: Cluster system with information display and alarm, Navigation, Communication, Automatic A/C, Automatic Seat, and Audio System, etc.

As the operations on vehicle tend to electronic control, the electronic control system diagnosis is playing an important role in the development of an automobile maintenance enterprise. The traditional experience in repairing can not meet the current needs of automobile development. The advanced maintenance equipment is an essential part in repairing.

1.6.3 The birth of LAUNCH diagnostic products

LAUNCH, as the pioneer of auto aftermarket, has been at the forefront on the R&D of automotive after-market products in the industry. In 1994, LAUNCH has taken the lead in developing the first generation of domestic automotive diagnostic computer-431ME which owned independent intellectual property rights, which established a precedent in the domestic automotive diagnostic industry and lead China automobile repair industry into a new era. The concept of "electronic eye" come from LAUNCH has now been widely accepted and been consistent use in the industry, which represents the creativity and pilot of LAUNCH company in the industry. After that, company continuously developed a serial of new automotive decoders, also popular on the markets, such as ADC2000, X-431 Super scanner, X-431 TOP, X-431 TOOL, X-431 Diagun etc.

With 20 years of automotive diagnostic technology experiences, LAUNCH Tech.Co. Ltd heartfelt produces X-431 PAD integrated intelligent automotive failure diagnostics, which fully represents enterprise and its culture in 2012. This is the first significant diagnostic product after LAUNCH enters into the Telematics.

Chapter 2 Industry Knowledge

2.1 History of Product Development

2.1.1 Development of the Automobile Electronic Technology

2.1.1.1 Fast Development of the Electronic Technology

In the past 10 years, the automotive industry two significant changes occurred. First, the growth point is by European and American markets from Asian countries to developing regions of the market-based transfer. Data show that from 2007 to 2012, Asia and Europe will dominate the global vehicle production 89%, BRICs and other Asian countries will become the main force of automobile consumption. Second, the mature European and American countries in the market, improve the car's performance more dependent on electronic technology. Studies have shown that from 1989 to 2005, electronic equipment manufacturing costs in the proportion of the vehicle, from 16% to 30%. In 2011, each IC's cost about the new car at 360 dollars will be 3% to 4% annual growth rate has continued to grow.

Automotive electronics technology development and large-scale applications are from the 20th century began in the late 70s, and 70s from the 20th century to 80 years, roughly experienced three stages of development.

The first development stage before 1971 began production technology from a low alternator, voltage regulator, electronic flash, electronic horn, intermittent wiper devices, car radios, electronic ignition and digital clock and so on.

The second development stage is 1974 to 1982. Integrated circuits and below 16-bit microprocessors' application on the car is the sign. Including electronic fuel injection, automatic door locks, programmable driving, high-speed warning system, automatic lighting system, automatic defrost control, ABS, vehicle orientation, collision warning sensors, electronic timing, electronic transmission, closed-loop emission control, automatic cruise control, security systems, vehicle fault diagnosis and other electronic products. Most representative of this period is the development of electronic fuel injection technology and anti-lock braking (ABS) technology matures, making the car's major mechanical functions to control the use of electronic technology. However, at this stage mechanical and electrical connection is not very satisfactory.

The third stage of development from 1982 to 1990, the microcomputer applications in the car becoming more reliable and mature, to the intelligent direction. Tire pressure control of the development of products, digital oil pressure meter, anti-sleep device, traction control, all-wheel steering control, look into the instrument panel, voice synthesis and recognition, electronic load regulator, electronic road monitors, cellular phones can be heated windshield, reverse warning, speed limiter, automatic rearview mirror systems, road condition indicators, electronic cooling control and the parasitic power control.

Since 2005, it can be said to enter the automotive electronic technology the fourth stage of development. Microwave systems, multi-channel transmission system, ASKS-32-bit microprocessor, and digital signal processing applications, so that communication and coordination-oriented system, automatic anti-collision system, dynamic optimization system, autopilot and electronic mapping technology have been developed, particularly is the emergence of intelligent vehicles.

2.1.1.2 Electronic Technology Requirement for Automotive Industry

- Power
- Economy
- Safety
- Comfortable
- Environment Protection

2.1.1.3 The Applying Of the Automobile Electronic Technology

- Engine management system
- Automobile trouble self diagnosis
- Identification technology based on figure
- Automobile network communication technology: CAN/ FlexRay/MOST

2.1.2 Automobile Network Communication Technology

2.1.2.1 The rapid development of automotive harness

To improve the performance of the introduction of a large number of car electronics systems, leading to the rapid increase in wiring harness, and a significant increase in the wiring harness has hindered the further improvement of vehicle performance. Therefore, we must find a new technology and reasonable solution to the problem. Twentieth century, the early eighties there car network communication technology, is the best way to resolve this contradiction. Below:

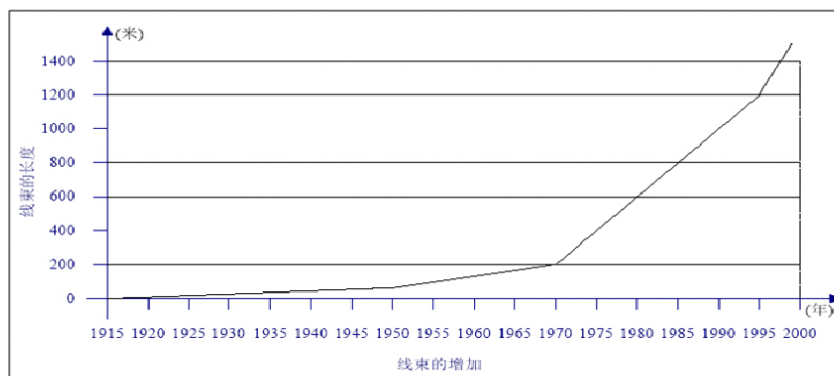


Figure 1 Trends for the Harness Number of the Volvo

2.1.2.2 Typical Network for Modern Automobile

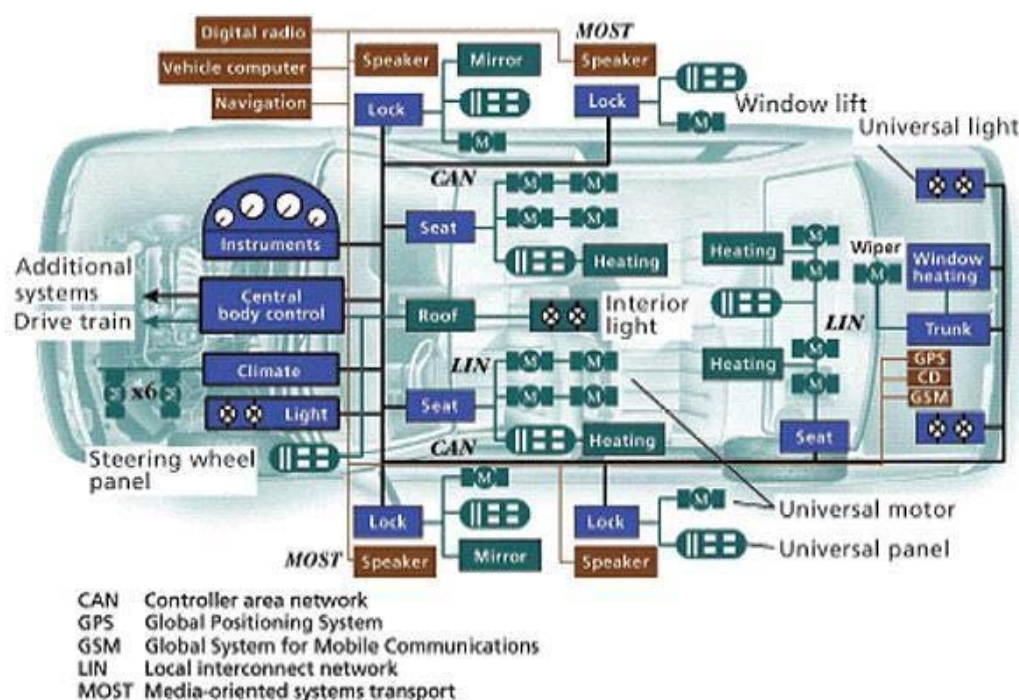


Figure 2 Typical Network Diagram for Modern Automobile

2.1.2.3 Classifications for the automobile network

It can be divided into the following five categories by functions and velocity:

- 1) A class: low-speed network for the actuators, sensors
 - A major class network for sensors, actuators, control.
 - Bitrates is generally 1 ~ 10Kbps, main types of network protocols: LIN, UART, CCD, etc.
 - Suitable for less demanding real-time occasions, mainly used in body control, such as electric windows, central locking, mirrors, seat adjustment, lighting, vehicle fault diagnosis of early
- 2) B class: data sharing between modules for medium-speed network
 - B class network protocol mainly for data sharing between separate modules, suitable for real-time less demanding situations, in order to reduce redundant electronic components.
 - Bitrates is generally 10 ~ 125Kbps, main types of network protocols: ISO11898-3 (fault-tolerant CAN), J2248, VAN (Vehicle Area Network), J1850 (OBD2), etc.
 - Mainly used in electronic vehicle information center, fault diagnosis, instrument display in the control
 - With the automotive network technologies, current and future mainstream B-class network protocol will be: CAN (ISO11898-3)
- 3) C Class: Multi-oriented, real-time closed-loop high-speed network
 - Mainly for high-speed, real-time closed-loop control of multiple control multiplexing network
 - Bit rates up to 10Mbps or more, the main types of network protocols: ISO11898-2 (high-speed CAN), TTP (Time-Triggered Protocol) / C, FlexRay, etc.

- Mainly used in power systems, real-time control and high reliability requirements of the occasion
 - Currently, C class networks are widely used in power and transmission system control and communication protocol standards: ISO11898-2, the next applied to X-By-Wire system, the main agreements: TTP / C and FlexRay
- 4) D class: for information, the network multimedia systems
- D class of intelligent data bus networks collectively referred to as IDB (Intelligent Data Bus), mainly for information, multimedia systems, etc.
 - According to SAE Category: IDB-C (low): SAEJ2366; IDB-M (high speed): D2B, MOST, IDB1394 etc.; IDB-Wireless (Wireless Communications): Bluetooth, etc.
 - D class of network protocols, the bit rate at 250Kbps ~ 400Mbps between
- 5) E Class: occupant safety systems for
- E class networks mainly for occupant safety systems used in the field of passive safety of vehicles
 - Bit rate is usually in 20K ~ 10Mbps, network protocol types are: SafetyBus, Planet, Byteflight etc.

2.1.3 Development of the Automobile Decoder

Automotive detection technology develops with automotive industry. In the early stage of automotive development, specified detection upon a wealth of practical experience. That is, depends on the artificial observation, analysis and logic reasoning. Along with the process of modern science technology, especially computer technology, automotive detection technology rapid develops. Nowadays, people rely on a various advanced equipment to test vehicle without disintegration. More important, it is safe, rapid, and reliable.

In shortly, automotive decoders, is a special equipment, which upon the connection between the PC data output and DLC with purpose of data exchange in various ECU. Decoder is divided into original and non-original decoder. The original automotive decoder is provided or designated by automotive manufactories, such as Benz STAR2000, BMW GTI, Volkswagen (Audi) VAS5052, TOYOTA INTELLIGENT TESTER, Nissan CONSULT 1/11, etc. General speaking, each automotive manufacturer has the original code detector of all kinds products which would be able to provide better aftermarket detection services. However, the non-original decoder is not provided and designated by the automotive manufacturer, instead of other equipment supplier. Such as KTS300/500 from Bosch (German), Scanner MT2500 of Red Brick from Snap On (USA), OTC from SPX Corp. Ltd, CARMAN from Korea, LAUNCH (Shenzhen), Beijin JBT, Shenzhen FCAR from domestic (China).

The development of automotive Decoder group into the following FIVE stages:

- LED Code: It was the earlier automotive detection solution. Connection with LED was between ground and signal cable. Base on the frequency and time duration of lighting, and refer to LED CODE TABLE, would be able to diagnose the automotive fault position and reason.
- Code Reader: It was the earlier automotive code reader to read the fault code in ECU. Refer to FAULT CODE TABLE to identify the automotive fault position and reason.
- Detection Device (Class A Network): Earlier general diagnoses device, with code reader, clearer, data steam in part system and easy motion testing function, but no CAN BUS function.
- Original Decoder (Class A&B Network): Original fault diagnostic device, with fault

diagnoses function for signal brand of automotive manufacturer, mainly produce for custom-made servicer factories and 4S stores.

Intelligent Decoder (Compatible for Class A,B,C,D,E Network): Most common diagnostic device, similar to X-431, X-431 Diagun, X-431 PAD from LAUNCH.

2.2 Industry Overview

2.2.1 USA Automotive aftermarket

The United States has more than 200 million car ownership, value of aftermarket is about \$ 300 billion. Independent automotive aftermarket accounted for more than 80% of the level of the entire automotive aftermarket. The called “non-independent aftermarket” , 4S shop service system occupies 20% of the market, its scale and impact is far behind the former. The United States independent automotive aftermarket has many automotive service brands, representative like NAPA, Auto Zone and Pepboy etc.

Professional repair shop chains are Americans first choice for car maintenance. Most people vividly regard it as "Macdonald" of automobile service industry. In a sense can be said, the United States become the world’ s first big auto country, in addition to the tremendous contribution of some large-scale car manufacturing company in the car manufacturing, the gradual perfection of the automobile chain industry also has made undeniable contributions.

USA Automotive aftermarket Enterprise Comparison				
Class	Components Accessories	Maintenance	Small & Medium Maintenance Service	Major Maintenance Service
OEM Affiliate	OEM Dealer			
	OEM Chartered Servicer			
	OEM own SUPWAVE (GM-GOODWRENCH)			
Indie Manufacturer	Super Market (WAL-MART)			
		Tire Makers (GOODYEAR)		
		Lubrican Makers (PENNZoil)		
	Component Professional Servicer (MIDAS, ACDELCO)			
	Automotive Service chain (PENSKE, PEPBOYS NAPA)			
	Traditional servicer			automotive maintenance

2.2.2 Automobile After-sales market of Japan

Several large Automobile companies are being the main suppliers for auto repair factories. For complete the after-sales service and also value the great economic profits of auto repairing industry, many regular chain or franchisee special auto maintenance shops have been established. With the factors of complete technology、 quality assurance of brand and unified standard, most

of Japanese are willing to maintenance their autos in special auto maintenance shops. Special auto maintenance shops obtain complete professional auto technology information and experienced mechanics; hence, while vehicle need maintenance, applying these technology information, the cause of auto fault can be found quickly and the best plan to fix the auto fault can be designed, in special auto maintenance shop, the matching original parts are used to the fault vehicle; hence, car owners do not need to worry about the quality of the vehicle maintenance.

Market Characteristics: the auto after-sales market of Japan is very close, dependent after-sales system occupies very important market position. The auto possession are 80 millions in Japan, and the scale of auto parts after-sales market is smaller than the US and Euro. Japan government made very strict vehicle inspection institutions and vehicles are asked to have the important inspection items in 4S distribution shops.

With strict auto inspection policy, Japan's auto after-sales system has the following characteristics: the independent after-sales system is small in Japan, the special maintenance shops of vehicle manufacturers are leading in the after-sales system, more than 80% applied auto parts are OEM products in after-sales system and the market is very crowded, one maintenance shop supports service for 710 vehicles for average.

Typical enterprise: AUTOBACS is the typical enterprise in the independent auto after-sales industries.

Analysis: Japan does not have large land area, the domestic market is very crowded, foreign auto brands in Japan is less and the domestic brands are leading in the market. Hence, auto manufacturers' service network covering and market leading can be achieved. Independent auto service enterprises have to give up the business of auto maintenance because the market status of auto manufacturers are strong and auto maintenance service is the main business of auto manufacturers; hence, independent auto service enterprises only able to engage in the business of auto related products. Moreover, Japanese have very exquisite life, they are willing to buy the auto beauty and comfort products. This is the survival business environment for AUTOBACS.

2.2.3 Auto After-sales service market of Euro market

Market characteristics: Euro countries are focus on Anti-monopoly, through the laws, auto manufacturers are being restricted to help 4S shop to obtain the competitive advantages by auto maintenance services and technical methods. Hence, 4S shops do not have strong market status as Japan in Euro. Meanwhile, there are not monopolies enterprises exist in independent auto maintenance service industry.

Typical enterprise: The auto manufacturing superpower of Germany is a good sample to analysis the auto maintenance market of Euro. In Germany, there are more than 10 influential auto maintenance chain brands, the scale of chain store from dozens of shop to more than thousand of shops. The owners of chain shops are auto parts dealer, auto parts manufacturers and maintenance enterprises are Services of chain shops include auto diagnose、auto repair and maintenance, auto consumables and auto care products sale, tire and steel rim products also sold in some shops. Auto service outlets with large business area, auto beauty service and tools sale are seldom.

Analysis: In Euro, vehicles are kept the original appearance, auto rubbers do not layered, solar films do not stucked, decorations of leather seats and socket sleeves also do not used. Europeans have simple and natural auto culture, Many people tend to maintenance their vehicle by themselves. It is founded by the hundreds years of auto using history, people have comprehensive knowledge about vehicle. On the other side, labor cost of auto maintenance is very expensive. In Germany, the labor cost of mechanic reach to 70~140 Euro per hour. Europeans never waste their money for any unnecessary vehicles related consumptions; hence, auto maintenance is the main business of chain enterprises in Euro.

2.2.4 Auto After-sales service market of Euro market of CIS

CIS has its own policy systems. Vehicle maintains industries in CIS are quite different from western country. Especially since 70s, the traditional minor production repair concept, have developed to massive production concept. Undeniably, this kind of change can be said it is the result of planned economy policy. Under this guidance, the automotive repair industry normally are large and medium-sized enterprises in the CIS countries, the average annual repair capacity for repair enterprise are 830, which, 74% are able to repair less then 1000 cars; 11% are able to repair 1000 to 3000 cars, 4-5% are able to repair more than 3000 cars per year.

In CIS, In CIS, automobile repair enterprises are set by their communication department and big transportation enterprises. Maintenance enterprises are also set by these units. According to the number of automobile needed to be maintained and depth of the work, they are divided by three types of maintenance stations. Statistics show that, in auto repair industry, 36% is belong to the departments of transportation; 28% is belongs to the agricultural department; the rest of market is belong to other departments. In recent years, with the further deepening of the reform and from the planned economy to market economy, a lot of collective and individual economy of small or special repair enterprises quickly joined vehicle maintains market. In the long period time, CIS pay more attention in the new technology, new research, their technical can support the maintains companies to repair old pieces and 17% of the total number of auto parts are old ones., repair old piece price is valued 50.5-70%.of new parts.

2.2.5 Auto After-sales service market of Euro market of Singapore and Thailand

Singapore as a city country, all vehicle maintains industry is present as a central mall. This mall is formed with dozens of small vehicle maintain companies and 1 inspection station. This model is highly competitive but is convenient for car owners and easy for management. All vehicle maintain centers are private and are authorized by Singapore government. The inspection station is controlled by computer, which included: Wheel alignment, Steering and transmission system, braking ability, light signal and discharge. The inspection stations normally have large workshop, which contain sever inspection lines.

There are 2 main kinds vehicle maintain companies in Thailand, one is foreign capital company, and the other are private and corporate company. The foreign capital vehicle maintains companies normal are world famous auto manufacturers. They got huge competitive advantage in equipment, capital, techniques, and management. Beside, in the customer service part, the foreign capital vehicle maintain companies have chain stores all over the country, and for the maintained car, if it still in warrantee period, the car can have free maintain service in the same

brand foreign capital vehicle maintain company but different place. It's really convenient for the car owner. For the second type of vehicle maintain companies, they are small and have fewer staffs, however, this kind of companies also have the necessary diagnosis equipment.

2.2.6 Industry Characteristic:

➤ Four Development Stages of automotive aftermarket



➤ Development trend

The brand management

About service, implement the chain plan in order to use brand influence the service network construction.

From repair to maintenance

In the 1980s, US auto repair market began to shrink, the No. of repair shop dropped to 31.5 million. Meanwhile, professional car care centers appeared grow explosively, it increased to 3.1 million in 1995 alone. At present, US car care industry has accounted 80% market share of repair industry. The old fashion repair method—dismantle is no longer used, that has been taken place by mainly maintenance, implement dismantle free maintenances, that depend on the real situation.

Electronic and information

With the development of automobile industry, automobile electronic level has been increased significantly. Car care and maintenance have become more and more complex. Experienced worker has been taken place by No. of high tech diagnostic and repair equipment in the car repair industry. For example, Four-wheel alignment, Scanner, Car oscilloscope, Car meter, Tail gas detector, Decoder and Special test table.

In developed countries, internet has Car maintenance material inquires, the fault detection, diagnosis expert group consultation, Q & A, technical training, vehicle maintenance material purchases, maintenance information integrated management, etc. vehicle repair network also played important role to obtain maintenance material, diagnostic data, Circuit diagram, repair process, so that information asymmetry between different scale of vehicle maintenance and repair enterprise.

Scale management and standardized management

Automobile maintenance industry's scale management is not like automotive industry, which is not mean establish large car care and repair facility, It means to own large No. of Chain branches. Such as standard fast maintenance system has 1000 stores, and it is still expanding its network in the worldwide.

Scale management and standardization management cannot be separated. Within the same chain system, obtain same store design, personnel training, management training, unified service management training, unified service identification, unified service standard, unified service price, unified management rules and unified technical support; The logistics center distribute helps reduce material storage and capital takes up, in order to lower operating cost.

The complicated automobile products, bring the maintenance technology is becoming more and more complicated, so that the cost of equipment continue growth, not every service point can afford to the whole range of equipment. Therefore, foreign auto companies began to separate sales and after-sales service, which is equip the whole range of repair equipment in several large maintenance service center, and the general point of sale only do simple repair and maintenance.

Specialized operation; integrated management

While automobile manufacturers provide more thoughtful after-sales service, vehicle maintenance and repair tool industry start specialized operation trend, like specializing in glasses, tires, lubricant, auto beauty products, acoustics, air conditioner and etc. The specialized operation's unique advantage is high level technical expertise, full product specifications, lower relative price.

Meanwhile, comprehensive (one-stop) operation developed rapidly. Like gas station also provides car wash, minor repairs, general maintenance, spare parts supply and other services, which of course is to increase operating income. Based on current trends, the original stronger first-and-second class maintenance enterprises, mostly will be incorporated into the after-sales service system of the big vehicle manufacturers at home and abroad, the former street repair shop will be replaced by fast repair chain network. Professional repair in the future will have larger development space.

2.3 Product Classification

Automotive diagnostic equipment currently on the market can be divided into the following categories:

- **Original:** Dedicated diagnostic equipment for various car manufacturers. Characteristic: Divers' functions, more measurable models, can diagnose the car from several angles, such as the waveform analysis function of oscilloscope. inconvenient to move, expensive
- **General:** handheld diagnostic instrument. Characteristic : Mainly for ordinary automotive diagnostic function, easy to move, more measured models, moderate price
- **Luxurious:** integrated a variety of automotive models, multiple functions in luxurious product. Characteristic: various functions, model coverage widely, and diversity solution to diagnose fault, such as oscilloscope waveform analysis. Not easy to carry, and expensive.
- **DIY code reader card:** for individual users. Characteristics: Simple diagnostic functions, single measurement models, easy for owners to know about their cars, cheap.

Chapter 3 Product Knowledge

3.1 Brief introduction

X-431 PAD is the new generation tablet diagnostic scanner of LAUNCH for DBS (Diagnosis Based Solution) car system, configured with Windows Embedded Standard 7 OS, built-in printer and DBScar connector, with wireless (Wi-Fi) and Wired Network, One-click update and vehicle diagnostic functions (via Bluetooth communication).

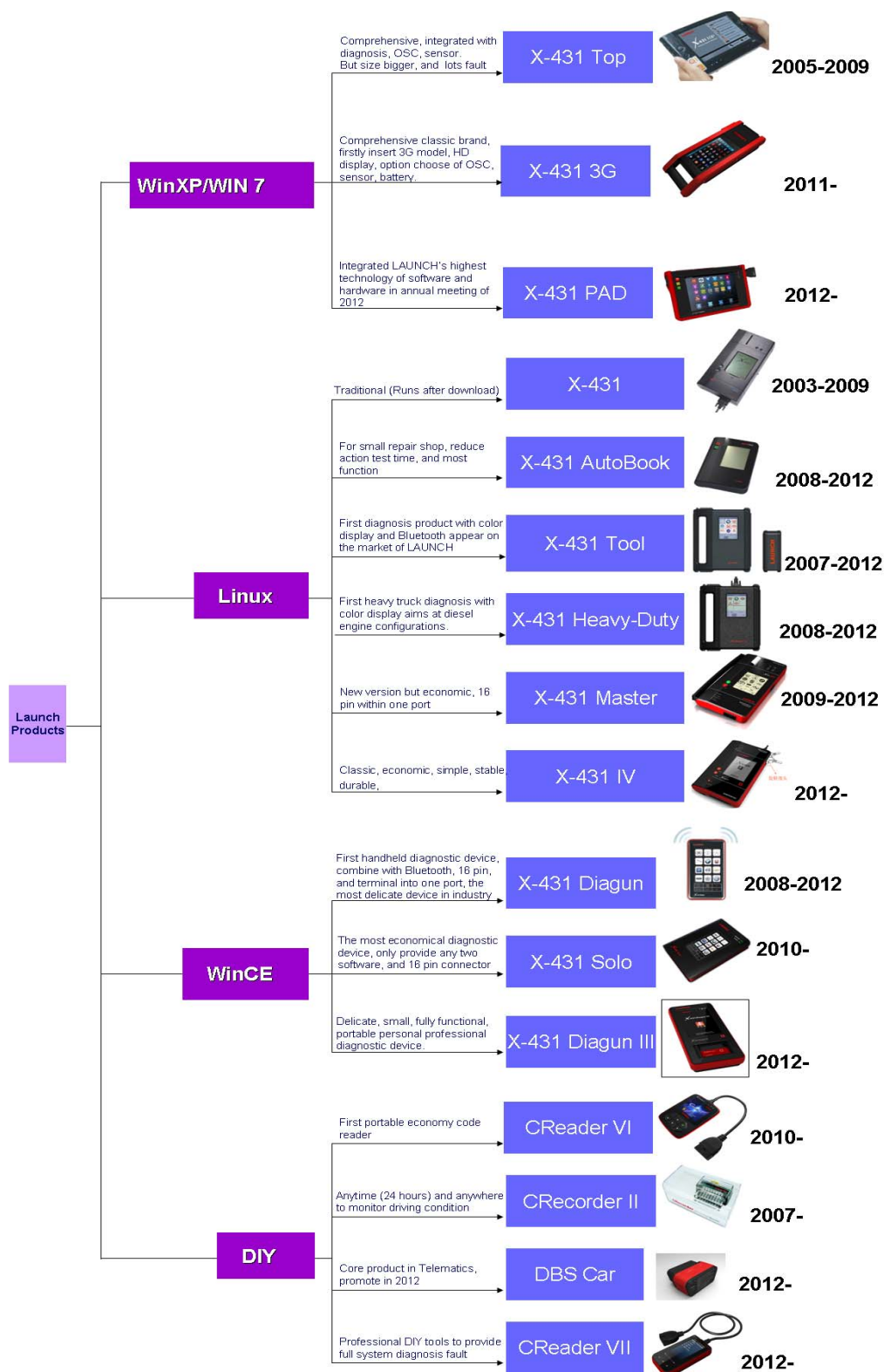
Extended functions: VGA/HDMI projection, Oscilloscope, Engine ignition analysis, Sensor simulation and test, Multimeter, Battery test, and Borescope.

Color touch screen, Easy operation.



Figure 3 Appearance of X-431 PAD main unit

3.2 Product history



3.3 Working Principle of Product



Figure 4 X-431 PAD Working Principle Diagram

3.4 Product Configuration

3.4.1 Introduction of X-431 PAD Complete Unit

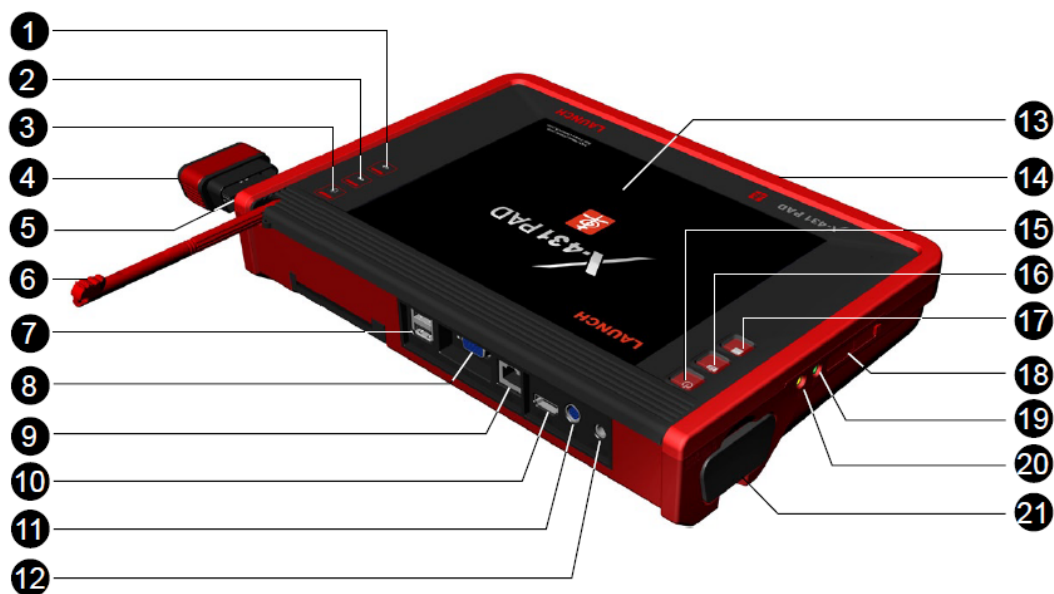


Figure 5 X-431 PAD Frontal Structure Diagram

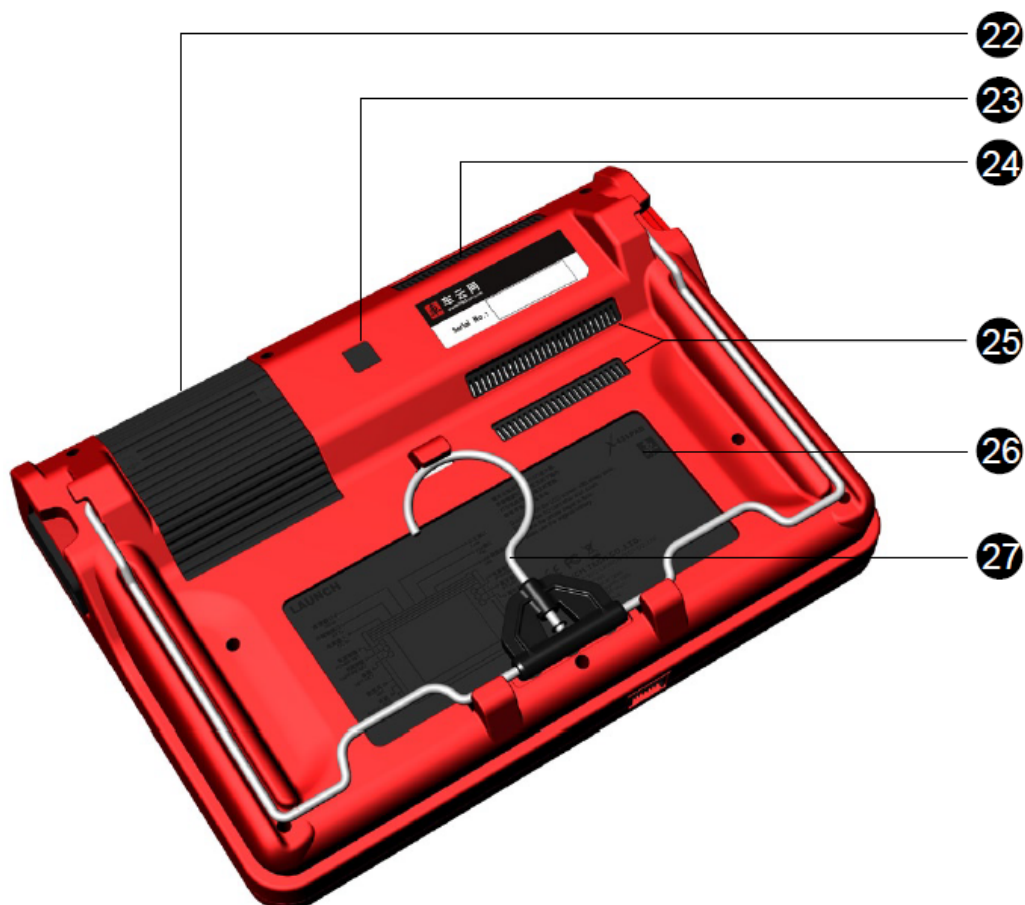





Figure 6 X-431 PAD Behind Structure Diagram







No.	Name	Descriptions
1	Communication indicator	It flashes while X-431 PAD communicates with DBScar diagnostic connector.
2	Bluetooth indicator	It lights up while Bluetooth is activated.
3	Power indicator	It lights up while X-431 PAD is on or in use.
4	DBScar diagnostic connector	To communicate with X-431 PAD main unit.
5	Slot for DBScar diagnostic connector	Only for housing DBScar diagnostic connector
6	Stylus	For clicking operation
7	USB port	To connect USB devices. While extending X-431 PAD function, it is to be connected to Scopebox, Sensorbox or batterybox.
8	VGA port	To connect an external projector or monitor etc
9	Ethernet port	To connect Ethernet cable for wired network
10	HDMI port	To connect an external projector or monitor with HDMI interface

11	Borescope interface	To connect an Borescope
12	Power interface	To connect the included power adaptor
13	Touch screen	Color touch screen for displaying. On-screen keyboard and handwriting input are supported.
14	Charging slot	Place X-431 PAD on the charging base (optional) for charging.
15	Power button	Press once to turn it on; keep it pressed for while to turn it off.
16	Camera/video button	for photographing or video recording
17	Screen capture button	To capture the current screen
18	SD card slot	To store SD card
19	Audio out port	To connect earphone
20	Audio in port	To connect audio device, such as amplifier.
21	Cover for DBScar diagnostic connector holder	Remove the cover and connect the DBScar diagnostic connector to the DLC simulator for user experience or demonstration.
22	Printer	To print the result out
23	Camera lens	To take photos or record video
24	Buzzer & air vent	To exhaust heat to ensure a normal temperature.
25	Air intake vent	
26	Battery cover	7400mAh lithium polymer battery is installed below it.
27	Hook/stand	Use fingers to lift the hook up, then hang it on the target object; To place it on a desk, unfold the hook as an stand to support X-431 PAD.

3.4.2 Configuration Accessories

Accessories in X-431 PAD are adaptable, but configuration would be different according to different markets, including diagnostic software, testing port. Details refer to local agent or random distribution from X-431 PAD configuration packing list.。

No.	ERP Number	Name	Qt.	Descriptions	Pictures
1		X-431 PAD main unit	1	To connect X-431 PAD main unit to DBScar diagnostic connector	
2		DBScar diagnostic connector	1	To connect to vehicle' s DLC.	
3		DBScar USB cable	1	To connect X-431 PAD and DBScar connector	

4		Cigarette cable	1	To obtain power supply from vehicle's cigarette lighter	
5		Power adaptor	1	To convert 100~240V AC power supply to 12V DC power supply.	
6		Stylus	1	For clicking or writing on the screen	
7		SD card (optional)	1	For extending memory	
8	199010001	OBD II extension cable	1	Extension cable for port and diagnosis socket	
9		Thermal printing paper	1	Information printer	

3.4.3 Standard Configuration

Hardware in this product only supports fault diagnostic for the cars, and unity for the following two configurations:

- 1.301180018 X-431 PAD OVERSEA Configuration, open for whole oversea regional market.
- 2.301180003 X-431 PAD PROFESSIONAL Diagnostic Configuration, only for Chinese regional

3.5 Product Function

3.5.1 Product Advantage

- a) **Compact Structure, Strong Hardware Configuration:** 1.6GHz Dual-core CPU processor, 9.7 inch HD IPS screen, built-in thermal printer, and diversification interface, to meet customers personalized needs.
- b) **Rich Multimedia Device:** integrated with camera, video, and projection output.
- c) **Unique Screen with 12 set Data Flow Waveform Display:** Display multiple (MAX 12) groups data flow waveform figure clearly in a screen, which would be convenience for failure fast analysis and judgment.
- d) **Custom- made Remote Collaboration Function**

- e) **Combining with modern communication technology, as the first high-end diagnosis product in DBScar application from LAUNCH Corp. Ltd:** completely adaptable to mainstream communication mode, such as WiFi, Bluetooth, 3G, and satisfy 2-3 years relevant commercial products inspection.
- f) **Diversity Internet Application: Provide online update, feedback and query. Simultaneous, supply full open browser, and switch access LAUNCH** www.dbscar.com directly. Similarly AllData (USA) and AutoData (Euro) professional website supply relevant data and information queries conveniently to solve work working questions and services support. A few website would require charging for database services.
- g) **ONE KEY which is variation, convenient, efficient:** Provide multiple functions, such as ONE KEY Screen Capture, ONE KEY Upgrade, ONE KEY Feedback, ONE KEY Switch, and ONE KEY Recovery, to solve general operation questions in system, which lead to greatly improve work efficiency.
- h) **Flexible and Convenient Operation:** Supply different operation, as desktop placing, steering wheel setting, handheld and suspension hood use mode.
- i) **Extensive Models Coverage:** inherited all functions in X-431 series products function, which is the most widely coverage of comprehensive diagnosis products, It covers 220 different automotive modes, over 90% automotive market in Asia, Euro, the United States, and 2500 different diagnosis software.
- j) **Special Features:** Accompany with 20 years diagnostic technology experience, continuous development base on basic diagnosis functions, would extend many special features covering different forms of products.

Main functions:

- Read ECU information
- Read DTCs
- Clear DTCs
- Actuation test
- System basic setting
- Read data-stream
- Read independent channel data
- Match channel
- Control unit coding
- Terminate test communication
- System log in

3.6 Main Parameters of the Product

- 1.6GHz Dual Core Processor
- Memory --- 2GB.
- Hard Disk --- 16GB SSD
- Battery --- 7400mAh, 7 hrs
- 9.7" TFT IPS Wide Screen
- 1.3 million pixels (640 x480 resolution) camera
- High speed thermal printer
- VGA&HDMI

3.7 Packing & Transportation

The packing box of X-431 PAD is made of PVC, which is not inflammable and high resistance against force and chemical corrosive. It can provide strong protection for the product. This material is not easily flammable, high strength, resistance to climate variability and excellent geometric stability, oxidants, reducing agents and strong acids have a strong resistance.

3.7.1 Packing

Use of carton box for packing:

Packing Size: L600mm×W170mm×H415mm

Net Weight: 9Kg

Gross Weight: 10Kg

3.7.2 Transportation

The following transportation package size and weight data for reference, check the invoice for the specific configuration of the transport packaging

Packing Size for Export (six boxes in one carton)

Size: L1056mm×W618mm×H440mm

Net Weight 为: 60Kg

Gross Weight:: 62Kg

Packing Size for Export (container in size of 20")

Size: L5890mm×W2350mm×H2390mm

Full load in 6 container, 111 cartons or 666 units

Chapter 4 Competition Analysis

4.1 General Situation of Competition

After many years development, there are many competitive diagnostic products companies in market.

■ Situations in foreign countries

First Class (high-end brands): SNAP ON BOSCH

Second Class (middle to high-end brands): SPX, , TEXA, Gutmann

Third Class (mid-market brands): LAUNCH, AUTOLAND, CARMAN /HANATECH,

Forth Class (middle to low-end brands): Autel.

In the developed countries, for example, high-end brands take up North America market. Brands like SNAP ON, SPX are all fortune 500 companies. They have high fame, mature channels, take up much market share and are in fierce competition. In Europe, BOSCH and Gutmann take up the most market share. Especially in Germany, where BOSCH locates, due to its long product lines and high reputation, BOSCH takes up the dominant position. The other competitors are TEXA, SNAP ON, SPX and the rest not so famous brands.

However, in some developing countries, due to the high price of the high-end brands, some high-end brands are in the absolute down situation. For example, in Latin America, due to the diverse car models, some Brazil brands focus on the local manufactured car brands. Their price is only 70% to 80% of ours. As a result, Brazilian local brands take up the most market share in Brazil. LAUNCH only takes up 5% of the marker share. While, in countries like Peru and Venezuela, LAUNCH takes up more than 20% of the market share. In Malaysia, LAUNCH and AUTOLAND dominate the market. Both take up 30% of the market share. While, in the latest 3-6 months, they did better than us. The reason is that our new code reader can't push to the market, and our old code reader's hardware and software both are behind AUTOLAND.

Generally speaking, LAUNCH's diagnostic products market share belongs to the top three groups globally.

■ Situation in the domestic market

The mainstream brands in China are LAUNCH, Jingbenteng、FCAR、Guangzhou Zhengyuan

Tech、Beijing Yuansheng Tech, Langren, Autel,Tailu Tech, Hangzhou Renfuhang, Baichetong, Shanghai Weichani Globe, Beijing Xintianhaohai, Fulai(Hongkong),etc.They form the following classes according to their brand reputation, products series and market share.

First Class: LAUNCH (X series/DIY), SPX(OTC(DK80)、Cheboshi(V-30)), BOSCH(KT400) SNAP-ON(RED BOX)、Jingbentegn(Caisheng series)、FCAR(F3-G、F3-W)、Autel(DS708).

Second Class: Guangzhou Zhengyuan Tech(V-series), Beijing Tianyuanshengye Tech(TY-2012, ADS-1, CF-16, DDTI)、Guangxi Sanyuan Tech(SY-808\SY2801), Baichetong(GD860), Cheluoji(Autologic Diagnostics), Langren(PS2series), Tailu Tech(SA-100).

Third Class: Hangzhou Renfuhang, Shanghai Weicheni Globe, Haila Trading, Beijing Xintianhaohai, Dalian Feier Trading, Fulai(Hongkong).

As the rapid development of the Chinese economy, car ownership is world-leading. Chinese market rapidly attracts SPX, BOSCH and SNAP ON. SPX and BOSCH enter Chinese market by acquiring Chinese companies. SNAP -ON enter china's market by establishing branch companies. After many years operation, it supports more and more Chinese brand cars.

LAUNCH is the first company in China that researches and develops vehicle diagnostic products. Its products support vehicle repair shop, 4S store and chain quick repair shops. The first product which is diagnostic product takes up more than 60% of the market share. Certain areas are even as high as 90%. LAUNCH has become the byword for diagnostic computer. However, due to the rise of many middle and small size companies, the market is turn to be smaller for LAUNCH.

4.2 Overseas competitors analysis

NO.	Company	Snap On	BOSCH	TEXA	SPX
1	Company introduction	Headquarters: America Wisconsin China Shanghai Is the world biggest professional tool and equipment manufacturer. Products cover 150 countries globally. Its products have a very good reputation and are the first choice for many leading companies.	Headquarters: America: Wisconsin China: Shanghai BOSCH group is the world leading technology and service supplier. It's majored in auto technology, industrial technology, consumables and construction intelligence technology. The group includes Robert Bosch GmbH and its 300 branches over 50 countries.	Headquarters: Italy This company is the top class company for diagnostic equipment in Europe. Its products can be used on cars, motorbikes, commercial vehicles and farm vehicles.	Headquarters: Muskegon America SPX is the original equipment supplier for many auto manufacturers. It's a listed company and its annual income is 5 billion USD. It provides diagnostic equipments, professional tools, technology information service for 15 countries for the last 100 years.
2	Development history	1, Founded in 1920, listed on New York stock market in 1941, annual sales volume is 2.5 billion USD. Among S&P 500. 2, In 2004, SNAP-ON established its first Asia manufacturing center in Kunshan, Jiangsu Province, China. 3, The birth of the first generation of red box can be dated back in 1988. This product comes back to China in 2011.	Founded in 1886, acquired the Kingtec which has 10 years history of decoder's research and development. In September, 2011, Nanjing new factory began to build. Products cover spark plugs, Brake component, auto diagnostic system.	Founded in 1992	In 1912, named Piston Ring, the main business then was to design and manufacture original auto parts for the biggest auto company. In 2008, it acquires Cheboshi, AUTOBOSS and OTC. The acquisition of Kent-Moore symbolizes that its business shift from professional spare parts manufacture to auto dealing and repair market.
3	Company goal	Provide the most valuable production force solution for customers.	Outstanding partner of Chinese auto aftermarket	Goal: Become the most trust worthy partner, bench mark for auto ECU diagnosis and relevant service work. Prospect: refuse "second best" maintain the pioneer position.	The company culture is comprised by leader standard and value procedure.
4	Company strategy	Creative design, precision processing	1, Globally manufacture, sales and after-sale service. 2, The annual R&D investment is more than 3 billion Euros. Applied for more than 3300 patent in 2007 alone. 3, The EST system developed by BOSCH covers spare parts, system info., and data almost contain all models. 27,000 sedans, 15,100 commercial vehicles, 5,700 motorbikes and 8,000 special vehicles, etc. Ensure update every season so as to maintain the accuracy and timeliness.		1, SPX is a standard maker of diagnosis. It developed 53 original equipments for GM, TOYOTA, VW, BMW, RENAULT, NISSAN, etc. 2, Auto diagnostic and service products have reached more than 2500 types world wide. 3, permanent value maintenance
5	Sale and marketing mode	Established 15 branches, developed more than 300 dealers, established sound channels.	1, train how to promote products 2, after-sale business concept: "spare parts+diagnosis+service" It provides hardware (BOSCH spare parts, check equipment) and software (technology document, training, management concept) as auto professional service. 3, Based on the double advantage of software and hardware, BOSCH established more than 1200 professional auto repair stations, diesel system service centers and diesel system repair stations which form the biggest independent after-sale service network.		SPX's all diagnostic products are distributed globally. Cheboshi is just a brand of SPX. SPX hopes to use Cheboshi to quickly enter China's market.

NO.	Company		Snap On	BOSCH	TEXA	SPX
6	Product type		Sub-brands of SNAP-ON group: Snap-on, Sioux, ATI, Bahco, Blue-Point, Lindstorm, CDI, Williams, JohnBean, Hofmann, Cartec manual and electrical tools diagnostic software information and management system workshop equipment other solutions of auto dealers and repair centers Blue-Point detective instrument: redbox Blue- Point tool: general tool and pedal tool	diagnostic software auto maintenance equipment, electrical tools auto electronics Main force products: KTS, MTS series	car, truck, motorbike, farm vehicle, yacht diagnostic equipment workshop equipment diagnostic software auto dealer and service center's other solution Main force products of diagnosis: AXONE series : AXONE 4, AXONE Palmtop, AXONE Pad, AXONE Direct(support Wi red)	1, The main brands of the company are OTCgenisys, PCMAX, AUTOBOSS, etc. AUTOBOSS and OTC have different appearance but their software are the same which indicates that they share the same technology. 2, AUTOBOSS is the main product; the annual sales volume of it in America alone is 30,000. 3, Cheboshi V30 diagnostic product enhance SPX's confidence to enter the mid to low-end market. V30/PCMAX has added repair and help function. One type product has emission analysis and oscilloscope function
7	Technology features		1, Using its unique angle, changed mechanics working mode, 10 times improved efficiency, products considered mechanics and human engineering. 2, own 626 American patents and 1100 patent in other countries. 3, passed UL, CCC, JET, ISO9001, etc. certification	1, Elegant appearance, fast start speed, normal operation methods. 2, Jinde KT670, the function of BOSCH system is very strong, for example, high voltage test, low voltage test, start test, etc. Data flow is also very comprehensive, useful repair documents is prepared too.	Module level is high. Can be bought as per needs.	1, SPX auto service plan formed in 1997 contains the life period of an auto. 2, leading diagnostic repair help function is its major technical feature.
8	Customer segmentation			Vehicle manufacture, repair industry, education industry		Europe, America and China vehicle manufacture
9	Sales volume and market share				Sales volume is around 50 million USD. Turnover of 2009 is 48 million.	Takes up 30% of the auto-after market in America, the diagnostic products take up less than 5%, Cheboshi's sales volume ranks top 3 in China.
10	Mark et price	product	Solus Pro EESC328W	KTS670	Axone 4	REFLEX
		dealer price	2100 USD	5780 USD	4500 USD	1200 USD
		diagnostic price	4000 USD	7450 USD	7000 USD	2300 USD
11	Others		The first generation REDBOX comes back to China market in 2011.	After Germany and America, China has become the third biggest market for BOSCH	TEXA becomes SPA company in 2002	Acquire Cheboshi in 2008, launched representative product V30. BOSCH acquires SPX service solution department which will help BOSCH become a leading diagnostic solution supplier. Especially in the field of car diagnostic business.

4.3 Domestic Competitors Analysis

NO.	Company	JINBENTENG	FCAR	AUTEL	XTOOL
1	Company introduction	It has two R&D centers in Beijing and Nanning. It has over 300 dealers in china. Capital cities have service centers. It has over 100 dealers and 15 branches covering Asia, Europe, America and Africa.	Founded in Shenzhen in 2007.It combines diagnostic products'R&D, manufacture, and sales. It establishes long-term cooperative with Shanghai Yatai, Jinbei Haixing, Chongqing Aimote, Liaoning Xinfeng Group, Russian Diagnostic Systems Company, Dongfeng Company.	Shenzhen Autel Technology Com.Ltd was founded in 2004. So far, Autel's products cover diagnostic equipment, decoder, EPB repair tool, TPMS diagnostic tool, engine oil return to zero, traveling data recorder, industrial endoscopes.	Shenzhen Langren Technology Co.,Ltd. was founded in the early 2010. there are 30 software engineers. Diesel vehicles inherited FCAR's technology, gasoline vehicles major overseas developing data.
2	Development history	Founded in 1999 Launched"Caisheng"series in 2007 SMS vehicle faults remote diagnostic system- "Car Doctor" Vehicle faults remote intelligent diagnostic instrument- "Car Eye"	Founded in Shenzhen in 2007, launched the first product F3-W in 2008. Will launch F6D diesel diagnostic instrument in 2012.	Launched decoder in 2005, Launched MaxiDAS® in 2010, Established branch company and R&D test base in America in June, 2006.	Founded in Beijing in 2010, Launched gasoline version of gasoline vehicle fault diagnostic equipment in 2012 in Beijing expo.
3	Company goal	"Everyone has a decoder" 1, fill in gaps in the auto ECM data communicative product (including self-diagnostic products), form the industry standard. 2, provide detecting equipment and self-diagnostic products for domestic auto manufacturers and car owners. 3, establish open auto repair network based on internet. Have remote diagnosis and online technology support function data website with a large number of users. Become one of the most effective domestic Chain internet service supplier of auto detect and maintenance provider in Auto aftermarket	Mission: provide the customer the best cost effective product. Vision: compete globally and revitalize Chinese auto maintenance industry Goal: through featured service to establish FCAR as the first brand in the diesel diagnosis industry.	Vision: deeply understand customers' needs; strive to become the leading supplier of the automotive electronics and automotive intelligent tools. Goal: become the leading supplier of automotive diagnosis and analysis equipments and solutions. Constantly expand the scope and competitiveness of automotive diagnostic products.	
4	Company strategy			Pursue the best quality of new developed products insist the business philosophy that based on the product.	
5	Marketing and service mode	Develop middle and small size dealers.	Become the first to achieve the goal of lifetime warranty service for products hardware in the auto aftermarket industry.	Main market is foreign countries and gradually expands the domestic market. Already established sale channels and send service personnel to America, Mexico, Germany, France, Spain, Italy, etc.	The future market will mainly locate in foreign countries. Already explored Taiwan market. Meanwhile, it's the agent for brands like OTC, AUTOCOM and DENSO.

NO.	Company		JNBENTENG	FCAR	AUTEL	XTOOL
6	Product type		1,Decoders of Jinbenteng TypeI,TypeII,Type IS,TypeIIS,GDT,Shenzhouxing series, Caisheng series and commercial vehicle series. 2, car doctor; similar to high level code reader, can individually choose car model software, mainly point at individual users. 3,car eye: check faults trough SMS	F6-D Diesel diagnostic instrument FD800 internet educational system F3 enhanced version series F3-D diesel vision F3-A gasoline Asia version F3-W gasoline global version F3-G diesel and gasoline version F1-D diesel version	1、MaxiScan®、MaxiDiag™ 系列 2、MaxiDAS® DS708 Cover diagnostic instruments,code reader, EPB repair tools, TPMS diagnostic repair tools, engine oil return to zero instrument, vehicle traveling data recorder, and industrial endoscopes. 1, automotive code reader: MaxiScan®、MaxiDiag™ series; 2,automotive diagnostic and analysis system: MaxiDAS® DS708	Covers the ECU refresh and adjustment tool, Automobile assembly line testing equipment, automotive electronic control system detective instrument, automotive fault tester, instrument for Vehicle maintenance of lights to zero iobd2, individual diagnostic products for mobile phones (OBD II/EOBD) X-VCI, Mini PS2: the design is similar to Diagon II, stands out portable. PS2(diesel vehicles):wireless Bluetooth diagnosis
7	Technology feature		Four technology original inventions: personalized design, data recording save print, warning display for out of scope, self-taught judgment function. Two features: value adding and intelligence IMS Zhiduoxing comprises diesel decoder.	1,product mainly focus on diesel vehicles, from diesel cars to engineering machinery; 2,apply module design technology, includes two high performance modules, high performance vehicle information communication modules and diagnostic data processing modules, data exchange is trough communication line between the two modules. 3, diagnostic data processing module applies 32 bits CPU, the program is very easy update and change. 4, energy comes from vehicle computer, can adapt the voltage from 9V to 27V, the internal energy protection design can protect the instrument's safety when energy breaks down.	1,increased many new functions, e.g. programming not only decoding, so is called vehicle diagnosis and analysis system; 2,Obey the rules of FCC、CE、RoHS etc. 3, has the widest and deepest systems of the global vehicle models.	1,almost develops entire special functions for Weichai,Yuchai,Dongfengkangmingsi,verified can do Weichai idling speed adjustment function, 2,use cheap pirate edition original factory diagnostic software and VCI box to maintain the service for dealers, 3, free open vehicle models repair data, includes circuit diagram, special function operation methods for certain models, anti-steal setting and key matching checking manual etc.
8	Customer segmentation		Education industry, repair industry, auto manufacturer, large motorcade, individual user.	First and second type auto repair enterprises, 4S stores, auto manufacturers, engine manufacturers, new energy enterprises, petrochemical enterprises and transport enterprises.	Automotive repair industry	engineering machinery, repair industry, individual users
9	Sales volume and market share		above 10%		100 million sales volume in 2011	
10	End user price	product	Caisheng	F3-D Diesel Version	MaxiDAS® DS708	PS2 Heavy Duty
		Dealer price	4800RMB-5000 RMB	5000-6000 RMB	3600-3800 RMB	6500-6800 RMB
		6800 RMB	9000 RMB	5000-5800 RMB	9500-11000 RMB	
11	Others					

4.4 Product Competition Analysis

PRODUCT	X-431 PAD	X-431 3D/GDS	Verus Pro	KTS 670	ISCAN II
Picture					
Operation System	Embedded WIN 7	Embedded WIN XP/XP PRO	Windows XP	Windows XP	Windows XP
Display	9.7 inch IPS Touch Screen	7 inch TFT Touch Screen	12.1 SVGA (800*600) TFT Screen	12.1 SVGA (800*600) TFT Screen	5.7 inch TFT Touch
Processor	Dual-core 1.6GHz	1GHz 32bit			1GHz 32bit
RAM	2GB	1GB	1GB	1GB	128M
Memory	16GB Electronic Hard Disk	8GB Electronic Hard Disk		40G	40G
Cable Network	YES	YES	YES	YES	YES
Wireless Network	YES	YES	YES	YES	YES
Manual			YES	YES	YES
VGA Extension	YES	YES		YES	
Battery	7400mAh				
Weight	3Kg	2.5Kg	2.2Kg	4Kg	2Kg
Camera	130M pixels				
HDMI Extension	YES				
Size (L X W X H) mm	307 X 214 X 67				340 X 175 X 85
Endoscope Extension	YES				
Upgrade	One Key/Manual/PC/U-Drivers	Manual/PC/U-Drivers		Online	Online
Data Stream Display	Data/Graph	Data/Graph	Data/Graph/Simulation	Data/Graph	Data/Graph
Multiple Grounds	4、6、12	4	Max 12	Max 12	
Heavy Trucks		YES			
Diesel Vehicle	YES	YES	YES	YES	YES
Passenger Vehicle	YES	YES	YES	YES	YES
System Recovery	YES				
Printer	Thermal Printer	Thermal Printer			
Power	DC12V	DC12V/24V	DC12V	DC12V	DC12V
Boot time	35 seconds	47 seconds	15 seconds	25 seconds	10 seconds
Diagnostic Mode	Bluetooth/Cable Access	Cable	Bluetooth/Cable Access	Bluetooth/Cable Access	Bluetooth/Cable Access
Coverage	Asian European AmericanDomestic	Asian European AmericanDomestic	Standard America, part of Asian and European	Standard European, America Asian needs purchase	Asian American European
Screen Capture	One Key	Software	Software	Software	Software
Camera	YES				
Vocie	YES			YES	
Chitchat (CC)	YES				
OBC	Option	Option	Standard	Standard	Option
Sensor simulation and test	Option	Option		Standard	
Battery Test	Option	Option			Option

Chapter 5 Sale Knowledge

5.1 The Knowledge Should Be Known before Sale

5.1.1 Who Could Be Our Customers?

- Distributor of automobile maintenance: they are generally well-capitalized and have stable customers. They are important channel for code reader.
- Automotive repair plant (including special repair shop, 3S&4S shops for automobile sales): they are the key channel for our code reader. It can solve the problems for automobile repair technicians, improve repair speed and quality and bring great benefits to the repair plants.
- Automobile quick repair and beauty shop: code reader can quickly detect automotive problems, increase repair speed and better showcase the features of “quick repair” .
- Universities or vocational and technical schools who have automobile related majors: they need automotive detective equipments to demonstrate certain knowledge.
- Automobile manufacturers: they need to perform end of line test and after-sale service.

Service CLASSIFICATION	DESCRIPTION	FEATURES
4S Store	A store operates car sales, repair, accessories and information services.	Higher price, good overall image, professional, qualified staff, repairing and accessories quality guaranteed.
Large auto repair shop	Large comprehensive repair business can provide the repairing vehicle and the main parts with all levels of maintenance, repair and replacement.	Can repair kinds of vehicles, generally set up in the suburbs.
Comprehensive auto repair shop	The first-and-second auto repair business without factory authorized, provide services regardless of brand, repairing and maintenance.	Service quality nonguaranteed
Authorized repair shop	A auto repair shop authorized by vehicle manufacturer to provide repairing and after-sale service in a area.	High price
Special repair shop	A shop focus on some special kinds of repairing service.	Single repairing services
Auto repair chain shop	A repair business replaces traditional auto repair business based on scattered operation, which is managed in accordance with uniform model.	Rely strong brand, unify service specifications, charge standards and quality of service commitment.
Fast fix center	A repair business engaged in comprehensive and special automotive fast fix service.	4S Store service quality, comprehensive repair shop's price, special repair shop's skill level
Fast fix shop or roadside repair shop	A small repair house engaged in vehicle maintenance and few repair service, can not complete whole repairing work.	Few personnel, low-level technology, non-guaranteed service quality.
Auto repair training school	A vocational skills school to train automotive technicians.	Majors division, training kinds of automotive technicians.

5.1.2 Why choose our product?

➤ ***The certainty of automobile development***

As the improvement of human beings' living standard, they have higher requirements for automobile performances. When automobile manufacturers utilize high-tech electrical control technology to improve the car performance they also make cars more complicated. It makes the repair work tougher when a fault occurs. In this case, a technician equipped with advanced equipment becomes necessary.

➤ ***The Necessary Tools for Automobile Repair Plant***

If automobile repair plants want to provide better services for customers, they have to be equipped with modern diagnostic instruments, improve repair speed and quality. Only in this way can more revenue be brought. At the same time, it's the key factor for car owners to justify auto repair plants' service quality.

➤ ***Other Factors***

Original manufacturer's diagnostic equipments are too professional to be easily used. Common operators can hardly use them and they can only diagnose single model with high price.

5.1.3 Where can customers buy our products?

Customers can buy our products through the local distributors authorized by LAUNCH or through the suppliers found on professional auto maintenance exhibitions.

5.1.4 When can customers buy our products?

- When the repair plant just founded
- The existed automobile repair plants that don't have code readers.
- Auto repair plants who want to expand their equipments
- Due to the aging of original code readers, new code readers are needed.
- Schools with auto related majors need to use auto faults diagnostic equipment to demonstrate techniques
- Auto manufacturers who launch new models or need to perform after-sale check and maintenance.

5.1.5 How do we do?

4.1.5.1 The Most Concerned Issue During Purchasing

Upgrade, service, price, function, ease of use, quality, compliment of fraternity

- LAUNCH has 20 years' experience of research and development on auto diagnostic code reader. It has a strong research and development team to ensure the synchronization for the newest models.
- LAUNCH has complete marketing network with 8 branch companies, dozens of offices and authorized training centers in china. After the purchase, LAUNCH will provide sustainable, highly effective services which will bring our customers utmost satisfaction.
- LAUNCH is a listed company. In the latest years, the revenue keeps increase which brings it adequate capital to provide customers with best products and service.
- The former X-431 series products have a large market share (over 60%). This makes DBS

easier to be accepted by customers (sale inertia).

➤ LAUNCH is a famous brand both in the domestic and overseas auto maintenance market.

5.1.5.2 Strategy for Channel Establishment

Maintain well the existing distributing channels, develop new distributors, and make the product flow more smoothly.

Through training sale team, collect market information, training customers, advertizing (professional magazine advertisement, outdoor advertisement, network advertisement, newspaper advertisement) etc. increase our brand notability and service system help distributors sell our products faster and more easily.

5.1.5.3 Brand Strategy

The launch of X-431 PAD showcases the strong R&D capability of LAUNCH Company and has positive effect to its brand image. The average market share of LAUNCH's diagnostic equipment is more than 60%. For some areas, it's even more than 90%. Sales personnel should be alert not to exaggerate products' functions, train and visit our customers, do the after-sale service well. In this way, we can improve the brand image in the customer's heart so as to pave the way for subsequent product promotion

5.1.5.4 Sale Methods and Strategy

For this product, customer can purchase from distributors and automobile manufacturers. These two sales modes have obvious different operation ways.

■ Automobile Mode

1、Decision Making Department and Process Analysis

➤ Decision making department----- technical department submit requirements, procurement department contact suppliers, technical, quality, procurement jointly make decision.

➤ Typical buyer----- procurement department

➤ Influencer----- supervisor, VP, leader of quality department, direct responsible person of quality department, main responsible people in technical department, product engineer of technical department, procurement department

Decision making process---- submit needs, sample fitting/experiment, sample evaluation, documents cross signing, sample machine determination.

----- Supplier inspection, business talks, after-sale agreement formulation, supply contract signing.

Among which: decision making process can be divided into the following two parts:

I, Technical department take the lead: technical department (including project engineering department) → procurement department

II, business department take the lead: procurement department → technical department (including project engineering department)

2、Purchasing Behavior Analysis

➤ **Through what channels can customers understand suppliers?**

Industry brands and notability influence (including media exhibition).

Benchmarking project influence within the industry

Sale contacts promotion, special networking session
Product demonstration and fitting effect

➤ **What are the motivations for customers to buy our products?**

Necessary repair equipment of 4S stores and authorized repair station
New model development, ECU change, have to choose new equipment
Original supplier quality
New technology attraction

➤ **What are the obstacles for customers to buy our products?**

Main obstacles:

- 1、the timeliness rate of manufacturers' after-sale service
- 2、revenue room brought by cost-effective price
- 3、quality guarantee and performance stability
- 4、brand notability

■ **Type of Dealers**

1、Decision-making department and process analysis

- Decision-making department---- Small and medium-sized maintenance companies; In major repair enterprise and 4S stores, repair manager and purchasing department are responsible for joint decision-making.
- Typical buyers----- Small and medium-sized maintenance companies; In major repair enterprise and 4S stores, purchasing department is responsible for execution.
- Influencers-----repairing technicians, shop owner, purchasing department
- Decision-making process-----demand proposal, procurement inquiry, brand recommendation, business negotiation, sample assessment, after-sales service agreement formulate, supply contract signed

2、Buying behavior analysis

➤ **Through what channels dealers understand suppliers?**

Trade show
oral spreading/ word-of-mouth spread
Manufacturers' sales and marketing
Industry associations promote
Web platform

➤ **What are the driving forces to impact the dealer's purchasing behavior?**

Decoder is the necessary production equipments for auto repair factories.
As the high-tech products, decoders equipments possess a certain profit space

➤ **What are the barriers to impact the dealer's purchasing behavior?**

Main Barriers:

- 1、After-sale service and timeliness rate of the factory.
- 2、The profit space be created by the cost-effective price.
- 3、Quality assurance and performance stability.
- 4、Brand awareness

5.2 Concerned Sales Problems.

The most important issue is to figure out the actual needs of the customers, we only sell the products to customers while the profits can be created by the sold product indeed.

- Do not overstate the product's function, diagnostic equipments can not be described as "omnipotent" tools,;otherwise, we can't explain the problems and customers will doubt about us.
- Product's function should be described honestly, product can not not be emphasized as "omnipotent" tool, only support the clear specification of market similar products comparison, and the obtained unique advantages of our products.
- We must help customer to know that the perfect quality and service obtained decoder do not exist in the market, almost 90%domestic automobile manufactures designate LAUNCH's products for the only ECU diagnose equipment, this proof that the quality of LAUNCH's products as same as the original decoder and also means X-431 PAD is leading in the similar products categories with high cost performance.

Chapter 6 FAQ

In process of operation of X-431 PAD, you may come across some questions, including the software, hardware, operation and something related to the vehicles. Read the user's manual to get the answer if you have any question. If it can not be solved still, please note it down and contact our Customer Service Center (hotline: +86-0755-84528767) for help.

Here, we list some frequently asked questions and answers on using X-431 PAD.

6.1 About Hardware

1Q: Why does the LCD touch screen respond so slowly in cold whether?

A: It is because the ambient temperature is close to the lower limit of operating temperature range (-10-55℃). Under this situation, it is necessary to warm up the machine for 30 minutes before test.

2Q: There is only backlight and no character on the screen. What should I do?

A: Check if the power is well connected. Turn off the machine, unplug the power connector and re-plug it. Turn on the machine after it has been connected to the power for 1 second.

3Q: Why there is no response or response incorrectly while clicking the screen with touch pen?

A: Please calibrate the screen again.

4Q: What can I do when the screen is confused?

A: Please quit the current application (interface), and run it again. If the problem still exists, please restart the system.

5Q: Why can't the data be input after Soft Keyboard is activated?

A: The position where the cursor locates can't be edited. Or you have not activated the cursor in the input position, please use the stylus to click the part to edit. You can input the data if the cursor flashes.

6Q: Why X-431Diagun fails in communication with ECU?

A: Please check and make sure that the diagnostic connector and diagnostic program are matching the vehicle make.

6.2 About Software

1Q: System halts when reading data stream. What is the reason?

A: It may be caused by a slackened connector. Please turn off the machine, firmly connect the connector, and switch on the machine again.

2Q: Why X-431 PAD fails in communication with ECU?

A: ECU does not respond. Please try to use the latest update tool to upgrade to the latest diagnostic program.

6.3 About System

1Q: Main screen blinks at the moment when engine ignition.

A: It results from electromagnetic interference and this is normal phenomena.

2Q: Diagnose interrupted during diagnosing process.

A: Caused by electromagnetic disturbing or poor connecting.

3Q: There is no response when communicating with on-board computer.

A: Please confirm the proper voltage of power supply and check if the throttle has been closed, the transmission is in the neutral position, and the water is in proper temperature.

4Q: The systems equipped with the vehicle can not be diagnosed.

A: DLC of some early models is separated; refer to User's Manual for details.

5Q: The fault code storage is blank.

A: Usually, it's the "suquela" for shared circuit. Please locate and analyze the most similar fault code and its circuit.

6.4 Other questions

1Q: The thermal paper can no be fed after being loaded.

A: It is possible to install it improperly. Refer to Chapter 2.3 Printer in the User's Manual or consult from our branch offices or dealers.

2Q: How long is the standby time of battery?

A: Recharge it correctly. In general, the charging time is about 6 hours for new machine. Once the charging icon disappears, it indicates it is fully charged. If standby time is set, it can last for about 5 hours.

3Q: The screen is too white and characters cannot be seen. What is the reason and what should I do?

A: It may be caused by improper contrast. Please refer to the section "Adjust Brightness" to adjust the contrast.

4Q: Why is the machine automatically powered off during standby?

A: It is because the machine has been set for energy saving. Automatic shutdown will take place if the machine is not operated for a specified period of time. Refer to the section "Power option" under System setting in User's Manual.

5Q: Why can't the tested result be printed out?

A: There may be no paper in the printer. Please mount a roll of new paper. See Chapter 2.3 Printer in the User's Manual.

6Q: Why is there no character on the printing paper?

A: The paper is mounted reversely. Please take out the paper and mount it again. See Chapter 2.3 Printer in the User's Manual.

Chapter 7 Qualification and Honor

7.1 Major customers

The following auto makers take Launch product as original scanner:

Beijing Jeep	Beijing FOTON	Changhe	ChangheSuzuki
ChanganSuzuki	Great Wall motors	CHANGFENG MOTOR	SG automotive
Dongfeng CNG	Dongfeng fengxing	Dongfeng Tech	Dongfeng commercial
Fuqi motors	Hafei motors	Aerospace Mitsubishi	Brilliance Auto
JAC motors	Jiangnan Auto	Jinbei-Auto	Liuzhou Wuling
Mianyang xincheng	Nanjing Iveco	Nanqi Soyat	Chery Auto
Shanghai Saibao auto		Tianjin FAW	Weichai power
Wuxi Diesel	Xiamen Gold dragon	Xinguang Huachen	Xinguang
Huaxiang	Chevrolet Spark	FAW hongta	FAW saloon
FAW jiabao	Zhejiang wangeng	Zhongshun Auto	ZhongxingAuto
Gonow auto	Zotye auto	Shanghai Huapu	Fudi auto
DIAS automotive	Dayun motor	Dajinma motorcycle	Chaoyang Diesel

7.2 Qualification and Honor



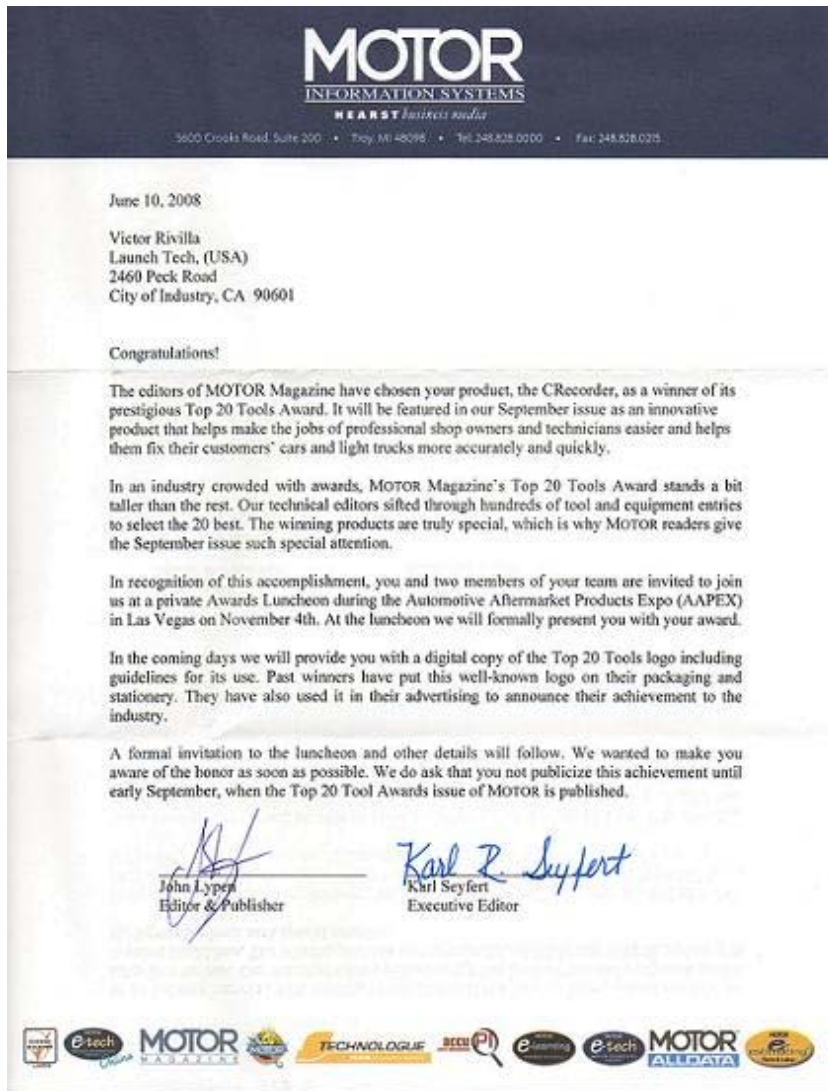
October 2009, the biennial COLER awards ceremony (about 15,000 professionals attended, COLER were set up two awards: product innovation and service innovation category award category awards, diagnostic products division of innovation in the service category in the awards) on Launch X-431 Diagun products company won first place in 2009 COLER Innovation Award.



April 2009 X-431 Diagun obtained AAAA Trade Show (Australian Automotive Aftermarket Products Expo) presented a new service offering the best tools and equipment titles (X-431 Diagun Awarded the Best New Servicing Product Tools & Equipment)



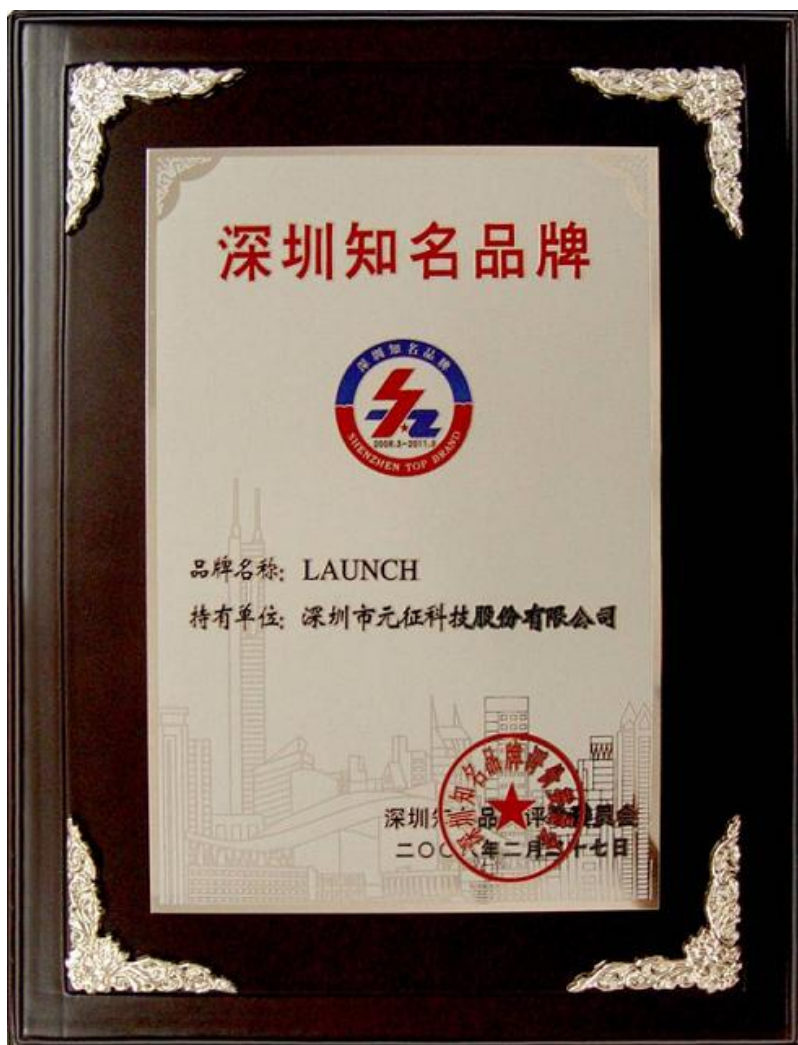
October 2008, by China Auto Maintenance Equipment Industry Association's "2007 20 largest car care product export enterprises", "2007 single largest export volume of 20 car care products," annual award ceremony in the Great Mekong Nanning held at the hotel, Launch technology was awarded the "2007 the 20 largest export manufacturer of Auto Maintenance," and "Car of the Year 2007 computer fault diagnosis of single largest exporter of car care products".



June 2008, Crecorder achieved the U.S. Motor magazine (highly authoritative and persuasive marketing publication) of the TOP 20 new product awards.



May 2008, Launch software company CMMI3 level certification.



April 2008, in the relevant industry associations, mainstream media, research institutions and the community participation, through rigorous evaluation process audit, Launch won the "Shenzhen-well known brand" praise.



February 2008, after the Shenzhen Municipal Trade and Industry Bureau, Guangdong Province, rigorous examination of the relevant government departments, Launch officially won the famous brand in Guangdong enterprises.



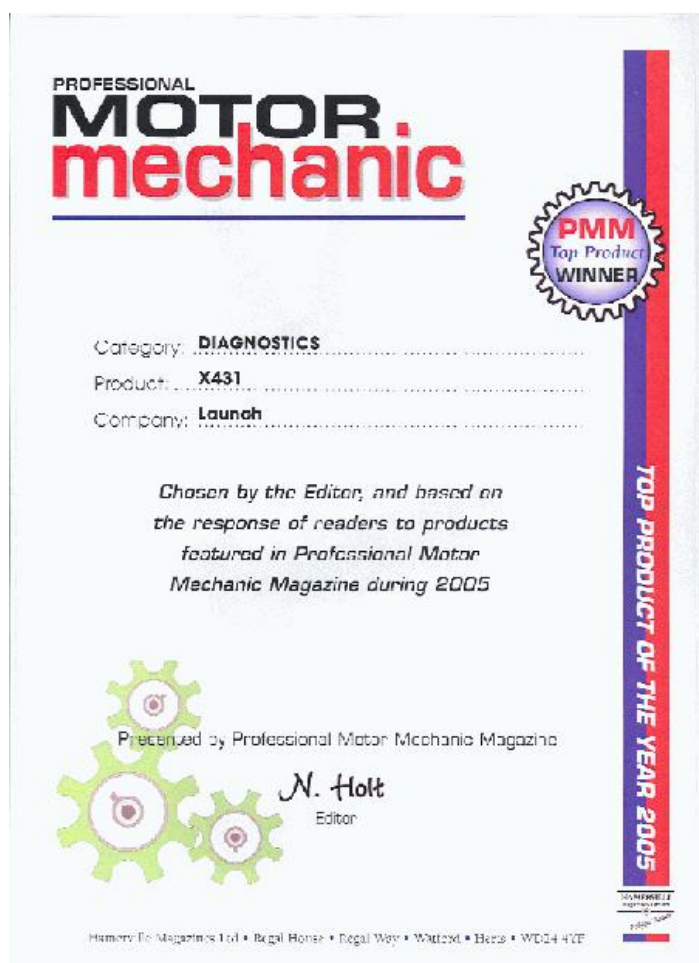
The 2007 National Science and Technology Awards conference was held in Great Hall of the People in January 8 of 2008. President Hu Jintao, Premier Wen Jiabao and other state leaders attended the ceremony and awarded winners personally. LAUNCH won the national scientific and technological progress second prize, the company president Liu Zhengzhi and the chief engineer Wang Xuezhi also received this certificate.



The X-431 diagnostic platform developed by LAUNCH TECH. CO., LTD. was identified as a national key product by Ministry of Science and Technology of the People's Republic of China, Ministry of Commerce of the People's Republic of China, General Administration of Quality Supervision, Inspection and Quarantine of P.R.C and State Environmental Protection Administration of China in November of 2006.



The X-431 diagnostic computer developed by LAUNCH TECH. CO., LTD. was identified as a National Torch Program project by State Science and Technology Commission in September of 2006.



March 2006 the British magazine company HAMERVILLE MAGAZINES LTD.'s Magazine PROFESSIONAL MOTOR MECHANIC (PMM) (UK authoritative industry publication), according to the selection of the reader to confirm X-431 the best products for 2005.

7.3 Customer Evaluation

“LAUNCH product features and stable performance, efficient service, considerate, have done very well in general”

——Jiangxi Changhe automobile company limited Director of equipment power Xunlei Pan

“The hardware configuration of the Electric Eye from LAUNCH is higher, and the response speed is much faster than similar products”

——Shenzhen materials company auto garage General Manager Assistant Mr Ye

“The service from LAUNCH is very warm, in time, and is absolutely first class in the industry.”

——Baoding Great Wall Automobile Sales & Service Co., Ltd Technology Services Bing Liu

“The quality of LAUNCH's service staff is very high, and they can quickly solve difficult

problems.”

——Beijing Economic and Trade Commission garage Mr Ye

“LAUNCH, which is as a large team, headquarters and branch offices in close cooperation, provide a comprehensive pre-sale and after-sales service to customers, we are very satisfied.”

——Chang'an University automotive testing and equipment maintenance development sales center General Manager Zhanlao Li

“LAUNCH's decoders achieve the level of original decoder in China. The instrument is Powerful, and the range of detection is very wide, always leading the development trend of automotive diagnostic equipment in China.”

——Xi'an Lao Li Carburetor Factory Factory Director Guowen Li

“Using LAUNCH IBERICA DIAGUN be provided very satisfactory results, quick and easy in operation, and testing are very excellent breadth”

——CENTRO ZARAGOZA (Spain a professional car repair workshop Association)

“Launch is the first European to follow the Chinese brand”

——The French car market after the magazine's readers see this sentence

“X-431 super power is the world's best-selling eye automotive diagnostic computer, one of nearly sixty thousand worldwide in the use of repair shop, he used the" open car diagnostic technology "represents the world's top automotive diagnostic technology level and the future direction of development is the best solution for automobile diagnosis.”

——HuiCong Auto Repair & Maintenance Network